

5 (3)

AUTHORS:

Tinyakova, Ye. I., Dolgoplosk, B. A., SOV/79-29-7-61/83  
Zelenina, T. P.

TITLE:

Redox Systems for the Initiation of Radical Processes (Oksilitel'no-vosstanovitel'nyye sistemy dlya initsirovaniya radikal'nykh protsessov). X. On the Mechanism of the Effect of Redox Systems With the Participation of  $\text{SO}_2$  (X. O mekhanizme deystviya oksilitel'no-vosstanovitel'nykh sistem s uchastiyem  $\text{SO}_2$ )

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2377 - 2381 (USSR)

ABSTRACT:

Sulfur dioxide, by reason of its duality, may be used in redox systems in combination with both oxidizing agents (peroxides, hydroperoxides) and reducing agents (mercaptans,  $\text{H}_2\text{S}$ , and di-enols). As was shown by the authors (Refs 1,2) these systems may be used to induce radical reactions in hydrocarbon media (Refs 1,2). In the present paper experimental data is given which makes an interpretation of the mechanism of the effect of the above systems possible. The reaction of isopropylbenzene-hydroperoxide with  $\text{SO}_2$  is extremely fast in hydrocarbon

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Redox Systems for the Initiation of Radical  
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solutions and causes a rapid gel formation in rubber solutions. This reaction is accompanied by the formation of polysulfone if styrene is used as a solvent. Nitrogen monoxide prevents this process. Analysis of the reaction products obtained with and without NO proved the reaction to proceed via the radicals ( $\text{SO}_3\text{H}$ ), which react with the monomer to give sulfonic acid. It was shown previously (Ref 2) that the reaction of trichlorothiophenol with  $\text{SO}_2$  produces a vulcanization of rubber at low temperatures. Thus, this reaction leads to the formation of unsaturated polymers. Its mechanism is that of a chain reaction and the reaction proceeds accordingly, and is accompanied by the addition of trichlorothiophenol and  $\text{SO}_2$  to the unsaturated polymer chain. NO prevents this process. There are 3 tables and 7 references, 4 of which are Soviet.

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Redox Systems for the Initiation of Radical  
Processes. X. On the Mechanism of the Effect of  
Redox Systems With the Participation of  $\text{SO}_2$

SOV/79-29-7-61/83

ASSOCIATION: Institut vysokomolekulyarnykh soedineniy Akademii nauk SSSR  
(Institute of High-Molecular Compounds of the Academy of  
Sciences, USSR)

SUBMITTED: June 16, 1958

Card 3/3

5.3831

67919

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SOV/20-129-5-29/64

AUTHORS:

Tinyakova, Ye. I., Dolgoplosk, B. A., Corresponding Member,  
AS USSR, Zhuravleva, T. G., Kovalevskaya, R. N., Kuren'gina,  
T. N.

TITLE:

Polymerization<sup>1</sup> of Dienes and Olefins Under the Action of  
Cobalt Oxides and Diethyl Aluminum Halides, and a Study of  
the Structure of Polymers

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5,  
pp 1068 - 1070 (USSR)

ABSTRACT:

The authors supply data concerning the polymerization of  
dienes: butadiene, isoprene, pentadiene-1-3, and 2-3-di-<sup>1</sup>  
methyl butadiene-1-3, as well as olefins: α-butene, styrene  
and α-methyl styrene in the presence of cobalt oxides  
(Co<sub>2</sub>O<sub>3</sub>-Co<sub>3</sub>O<sub>4</sub>, Ref 6), and diethyl aluminum chloride or di-  
ethyl aluminum bromide. The catalyst contained either 71-73%  
or 6.7% of Co. The latter content refers to cobalt oxide on  
aluminosilicate. Polymerization was carried out between  
0 and 40° in different ratios between cobalt oxide and di-  
ethyl aluminum halide (concentration 0.5-2.5 of weight per

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cent referred to the monomer). Oxygen and humidity were kept off. In the polymers produced the content of 1-2-, 3-4- and 1-4-cis- and trans-members was determined by IR-spectroscopic measurement (spectra taken by N. V. Mikhaylova). The unsaturation was determined on the basis of the reaction with iodine chloride (Ref 7). The vitrification temperature was determined according to A. I. Marey (Ref 8). Table 1 gives the results along with the molecular weight. Under mentioned conditions butadiene is rapidly polymerized already at 0°. Cobalt oxide on aluminosilicate retards polymerization to some extent. The polymers obtained exhibit a degree of unsaturation which is 97.5-99% of theory. This points to the absence of secondary reactions with the double bonds of the polymer. Butadiene polymers have a fairly regular microstructure. On cobalt oxide without carrier the amount of the 1-2-members was 5-8%, the total amount of the 1-4-members was 95-92%, with the most part being in the 1-4-cis-position. By the use of cobalt oxide on

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aluminosilicate, the amount of the 1-2-members in the chain rises. Due to the high content of 1-4-members this polybutadiene has a low vitrification temperature (down to  $-115^{\circ}$ ). Isoprene is polymerized more slowly and at higher temperatures (at about  $40^{\circ}$ ) as compared to butadiene. Here too, the process runs more slowly with the use of aluminosilicate as carrier. It may be observed from table 1 that both the microstructure of polyisoprene and the vitrification temperature are not changed appreciably by the concentration of the aluminum-organic compound nor by the ratio between cobalt oxide and aluminum diethyl halide. Fairly large amounts (17-18%) of isopropenyl side-groups increase the vitrification temperature of the polymer considerably. The total content of 1-4-members is about 80%; their major part is in the trans-position. A further strong retardation of polymerization takes place in the transition to higher dienes.  $\alpha$ -butene is not quickly polymerized at room temperature and does form no more than a caoutchouc-like substance. Neither styrene nor  $\alpha$ -methyl styrene are polymerized by the procedure de-

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scribed. Finally the authors state that no gaseous hydro-  
carbon products are formed in the interaction between co-  
balt oxides and an aluminum-organic compound at 0 to 80°. ✓  
There are 1 table and 9 references, 5 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk  
SSSR (Institute of High-molecular Compounds of the Academy  
of Sciences, USSR)

SUBMITTED: September 5, 1959

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15.9210  
5.3831

5-(3)

AUTHORS:

Tinyakova, Ye. I., Dolgoplosk, B. A., 68164  
Corresponding Member, AS USSR, SCV/20-129-6-30/69  
Kovalevskaya, R. N., Zhuravleva, T. G.

TITLE:

<sup>15</sup>  
Polymerization and Copolymerization of Dienes and Olefines on  
a Chromium Oxide Catalyst

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1306 - 1308  
(USSR)

ABSTRACT:

The authors (Tinyakova and Dolgoplosk) proved in a previous paper (Ref 1) that polymerization of butadiene and isoprene on a chromium oxide catalyst yields crystalline polymers containing only 1 - 4 links in trans position in the chain. Polymers of pentadiene-1 - 3, of  $\alpha$ -butene, as well as a copolymer of dienes and olefines which are formed by polymerization on the above catalyst are described in the paper under review. Polymerization and copolymerization were carried out under conditions equal to those of the previous experiments (Ref 1). Contrary to butadiene and isoprene, pentadiene-1 - 3 yields an amorphous polymer, soluble in benzene, specific weight = 0.89. Its vitrification temperature is  $-60^{\circ}$ , its unsaturation 97% of the

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Polymerization and Copolymerization of Dienes and  
Olefines on a Chromium Oxide Catalyst

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theoretical value. Fragments connected in position 3-4 are missing in its chain. Most of the 1 - 4 links are deposited in a trans position. On a chromium oxide catalyst,  $\alpha$ -butene yields a crystalline fibrous polymer partially soluble in hot toluene and boiling diethyl ether (about 30%); its specific weight is 0.96. Figure 1 shows the dispersion curves of X-rays on poly- $\alpha$ -butene between 20 and 150°. A distinct maximum proves the crystalline structure of the polymer. A. N. Andreyeva carried out the radiosopic investigation by means of the X-ray apparatus of type URS-50. The crystals melt at about 140°. Modification I exists up to 40°, modification II between 60 and 140°. Both modifications exist at about 50°. In the case of natural rubber and gutta-percha, the vitrification temperature of polymers with cis and trans configurations of the links is practically equal (-71°). Vitrification at -110° was to be expected in the case of transpolybutadiene. Table 1 shows that the polymer loses its crystallizing power due to copolymerization of butadiene or isoprene with other compounds. The polymer becomes highly elastic. These transformations are due to the destruction of the trans-1-4 structure. Amorphous elastic products are formed by copolymeriza-

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Polymerization and Copolymerization of Dienes and  
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tion of mixtures of butadiene with isoprene and pentadiene-1 - 3 as well as of isoprene with ethylene. Their vitrification temperature ranges between the vitrification temperatures of the polymers from corresponding monomers (Table 1). In all cases, a monomer mixture polymerizes more slowly than each individual monomer by itself (Fig 2). All butadiene and isoprene links in the chain are only in trans-1 - 4 position as was proved by infrared spectroscopy (photographs by K. V. Nel'son) in the elastic amorphous polymer from butadiene and isoprene (equimolar). The polymer contains 55% of butadiene links as was computed from the unsaturation values (Table 1). The vitrification temperature of the amorphous isoprene ethylene transpolymer is lower than that of natural rubber. In the case of butadiene, a highly elastic state could be attained only by copolymerization with isoprene and pentadiene-1 - 3. There are 2 figures, 1 table, and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute of High-molecular Compounds of the Academy of Sciences, USSR)

SUBMITTED: September 5, 1959

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TINYAKOVA, Ye. I., Doc Chem Sci (diss) -- "The initiation of chain radical processes under the influence of oxidation-reduction systems". Leningrad, 1960. 21 pp (Acad Sci USSR, Inst of High-Molecular Compounds), 250 copies (KL, No 11, 1960, 129)

DOLGOPLOSK, B.A.; TINYAKOVA, Ye.I.

Present-day problems of synthetic rubber; synthesis of rubber for  
general purposes. Khim.prom. no.10:55-67 0 '61; (MIRA 15:2)  
(Rubber, Synthetic)

S/064/61/000/011/002/007  
B101/B147

AUTHORS: Dolgoplosk, B. A., Tinyakova, Ye. I.

TITLE: The present state of the problem of rubber synthesis  
(Synthesis of special-purpose rubbers)

PERIODICAL: Khimicheskaya promyshlennost', no. 11, 1961, 52 - 60

TEXT: This is a survey on literature data concerning the synthesis of rubbers resistant to frost, gasoline, heat, heat and gasoline and of polysiloxane rubbers. There are 4 tables and 78 references: 26 Soviet and 52 non-Soviet. The four most recent references to English-language publications read as follows: R. H. Buddulph, W. R. Longworth, P. H. Plesh, Polymer, 1, 521 (1960); H. Kawai, R. S. Stein, J. Appl. Pol. Sci., 4, 439 (1960); Chem. Eng. News, 38, 107 (1960); C. B. Pierce, Ind. Eng. Chem., 52, 783 (1960). ✓

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DOLGOPLOSK, B.A.; TINYAKOVA, Ya.I.

Present state of knowledge of rubber synthesis (synthesis of rubbers for special uses). Khim.prom. no.11:794-802 N '61.

(MIRA 15:1)

(Rubber, Synthetic)

15.9201

28038

S/OB1/61/000/015/127/139  
B102/B101

AUTHORS: Reykh, V. N., Dolgoplosk, B. A., Tinyakova, Ye. I., Kalaus, A. Ye.

TITLE: Properties of carboxyl-containing rubbers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 15, 1961, 600, abstract 157354 (Sb. "Vulkanizatsiya rezin izdeliy". Yaroslavl', 1960, 43 - 55)

TEXT: Results of preliminary tests of butadiene styrene CK-1-30(SK-1-30) divinyl and isoprene rubbers with additions of methacrylic acid are given. Rubbers from SK-1-30 surpassed the rubbers from CK-30 (SKS-30A) with respect to stability to pure-gum mixtures, thermal stability, resistance to thermal aging, widening of cuts, wear, and with respect to elasticity. Carboxyl-containing isoprene rubber shows the least heat release on repeated deformation. [Abstracter's note: Complete translation.]

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DOLGOPLOSK, B.A.; TINYAKOVA, Ye.I.

Mechanism of diene polymerization and the structure of the polymer chain. Dokl. AN SSSR 146 no.2:362-365 S '62. (MIRA 15:9)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Dolgoplosk).  
(Butadiene) (Polymerization)

DOLGOPLOSK, B.A.; TINYAKOVA, Ye.I.

Mechanism underlying the action of complex catalysts in  
the process of polymerization. Dokl. AN SSSR 146  
no.4:856-859 0 '62. (MIRA 15:11)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-  
korrespondent AN SSSR (for Dolgoplosk).  
(Polymerization) (Catalysis)

KOVALEVSKAYA, R.N.; TINYAKOVA, Ye.I.; DOLGOPLOSK, B.A.

Study of heterogeneous catalyst systems based on cobalt  
oxides and salts, and organoaluminum compounds. Vysokom.  
soed. 4 no.9:1338-1344 S '62. (MIRA 15:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Polymerization) (Cobalt catalysts)  
(Aluminum organic compounds)

TINYAKOVA, Ye.I.; ZHURAVLEVA, T.G.; KUREN'GINA, T.N.; KIRIKOVA, N.S.;  
DOLGOPLOSK, B.A.

Cation activity of components of complex catalysts. Dokl. AN SSSR  
144 no.3:592-595 My '62. (MIRA 15:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR. 2. Chlen-  
korrespondent AN SSSR (for Dolgoplosk).  
(Catalysts) (Polymerization) (Cations)

S/190/62/004/009/006/014  
B101/B144

AUTHORS: Kovalevskaya, R. N., Tinyakova, Ye. I., Dolgoplosk, B. A.

TITLE: A study of heterogeneous catalytic systems on the basis of cobalt oxides or salts and organoaluminum compounds

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 9, '1962, 1338-1344

TEXT: An examination of the polymerization of butadiene or isoprene by catalytic systems consisting, on the one hand, of  $\text{CoCl}_2$ ,  $\text{CoBr}_2$ ,  $\text{CoSO}_4$ ,  $\text{CoO}$ , on the other hand, of  $\text{Al}(\text{C}_2\text{H}_5)_2\text{Cl}$  or  $\text{Al}(\text{C}_2\text{H}_5)_3$  in benzene showed the following results: (1) The reaction takes place at room temperature. Polybutadiene contains up to 90%, and polyisoprene up to 65 - 70% cis-1,4 bonds. (2) Redox reactions do not occur between  $(\text{C}_2\text{H}_5)_2\text{AlCl}$  on the one hand and  $\text{CoCl}_2$ ,  $\text{CoO}$ ,  $\text{Co}_3\text{O}_4$  on the other hand. The amount of  $(\text{C}_2\text{H}_5)_2\text{AlCl}$  in the mixture does not change, and gaseous compounds do not form between 20 and 80°C. The complex which initiates the catalysis has the composition  $\text{CoCl}_2 \cdot \text{AlR}_2\text{Hal}$  or  $\text{CoO} \cdot \text{AlR}_2\text{Hal}$ . (3) The system  $(\text{C}_2\text{H}_5)_3\text{Al} + \text{CoO}$  is inactive. Card 1/2

A study of heterogeneous catalytic...

S/190/62/004/007/006/014  
B101/B144

The system  $(C_2H_5)_3Al + CoCl_2$  is active only in so far as diethyl aluminum chloride is formed. Without monomers, the reaction followed the equation  $2Al(C_2H_5)_3 + CoCl_2 \rightarrow 2Al(C_2H_5)_2Cl + Co + mC_2H_6 + nC_2H_4$ , where  $m + n = 2$ .

Since the amount of resulting hydrocarbons is not affected by the solvents gasoline, cumene, and  $\alpha$ -methyl styrene, the reaction of  $(C_2H_5)_3Al$  with  $CoCl_2$  does not pass through radical processes. There are 4 tables.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR) ✓

SUBMITTED: May 22, 1961

Card 2/2

L 3204-66 EWT(m)/EPF(c)/EWP(j)/T RM

ACCESSION NR: AP016306

UR/0190/64/006/012/2202/2202

AUTHOR: Babitskiy, B. D.; Dogoplosk, B. A.; Kormer, V. A.; Lobach, M. I.; Tinyakova, Ye. I.; Chesnokova, N. N.; Yakovlev, V. A.

TITLE: Stereospecific polymerization of butadiene in the presence of pi-allylic complexes

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 12, 1964, 2202

TOPIC TAGS: polymerization, butadiene, catalysis, macromolecular chemistry

Abstract: It was shown that the polymerization of butadiene in benzene solutions under the influence of catalytic systems based on pi-allylic complexes of nickel and metal halides ( $TiCl_4$ ,  $VCl_4$ ,  $WCl_6$ ,  $AlBr_3$ , and  $NiCl_2$ )

leads to the formation of a polymer with predominantly (up to 94%) cis-1,4-units. The stereospecificity of these catalysts does not depend on the nature of the metal in the Lewis acid. The polymerization temperature was 20-50° and the time 8-15 hours.

ASSOCIATION: none

SUBMITTED: 13.1.16

ENCL: 00

SUB CODE: OC, CC

NO REF SOV: 000

OTHER: 000

JPRS

Card 1/1

BABITSKIY, B.D.; DOLGOPLOSK, B.A.; KORMER, V.A.; LOBACH, M.I.; TINYAKOVA, Ye.I.; YAKOVLEV, V.A.

Influence of the nature of halogen atom on the stereospecificity of  $\pi$ -allyl complexes of nickel in butadiene polymerization.  
Izv. AN SSSR. Ser. khim. no.8:1507 '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva i Institut neftekhimicheskogo sinteza im. A.V. Topchiyeva AN SSSR.

TINYAKOVA, Ye.I.; EYVAZOV, E.Z.

Polymerization of dienes induced by organocalcium compounds.  
Izv. AN SSSR. Ser. khim. no.8:1508 '65. (MIRA 18:9)

1. Institut neftekhimicheskogo sinteza im. A.V. Topchiyeva AN  
SSSR.

L 5/011-05 EWT(m)/EPT(c)/HWP(j)/T Po-L/Pr-L RM

ACCESSION NR: AP5010579

UR/0020/65/161/003/0583/0585

AUTHORS: Babitskiy, B. D.; Dolgoplosk, B. A. (Academician); Kormer, V. A.; Lobach, M. I.; Turyakova, Ye. I.; Yakovlev, V. A.

TITLE: Stereospecific polymerization of butadiene by catalytic systems based on the  $\pi$ -allyl nickel complexes

SOURCE: AN SSSR. Doklady, v. 161, no. 3, 1965, 581-585

TOPIC TAGS: polymerization, butadiene, stereospecificity, nickel organic compound, catalyst

ABSTRACT: The stereospecific catalytic effect of bis-( $\pi$ -crotyl) complexes of nickel in the polymerization of butadiene was investigated. The effect of the addition of metal halides to the catalysts was also studied. It was found that the catalysts cause the formation of 1-4 polybutadiene, consisting mainly (up to 95%) of cis-1,4-rings, and that the more effective catalysts form in the presence of  $\text{TiCl}_4$ . The bis-( $\pi$ -allyl)-nickel-bromide catalyst caused the formation of polymers in which the number of cis-rings is equal to that of trans-rings, with the formation of 1,2-rings being negligible. Addition of metal halides to bis-( $\pi$ -allyl)-nickel-bromide and to bis-( $\pi$ -crotyl)-  
Card 1/2

L 57011-05

ACCESSION NR: AP5010579

nickel-chloride increased the catalytic activity and altered the stereospecificity. All of the polybutadienes formed contained up to 92% cis-1,4-rings. The structure of the polymer was practically independent of the nature of the metal halide. Orig. art. has 3 tables and 1 formula.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva (All-Union Research Institute for Synthetic Rubber); Institut neftekhimicheskogo sinteza im. A. V. Kargin (Institute for Petrochemical Synthesis, Academy of Sciences, SSSR)

SUBMITTED: 30Nov64

ENCL: 00

SUB CODE: 00

NO REF SOV: 001

OTHER: 003

Card 2/2

BAGDASAR'YAN, A.Kh.; FROLOV, V.M.; TINYAKOVA, Ye.I.; DOLGOPLOSK, B.A., akademik

Electric conductivity of alkyl lithium solutions in connection with the  
polymerization process. Dokl. AN SSSR 162 no.6:1293-1296 Je '65.

(MIRA 18:7)

1. Institut neftekhimicheskogo sinteza im. A.V.Topchiyeva AN SSSR.

TENOGRADOV, P.A.; DOIKHILOSK, D.A., akademik; SOONNIK, V.N.; PARENAGO, O.P.;  
TINYAKOVA, Ye.I.; TUROV, R.S.

Role of electron-donor additions, water, and alkylating agents in  
the stereospecific polymerization of butadiene under the effect of  
a cobalt catalytic system. Dokl. Ak. SSSR 163 no.5:11147-11350 Ag '65.

1. Institut neftekhimicheskogo sinteza AN SSSR.

BABITSKIY, B.D.; DOLGOPLOSK, B.A., akademik; KOMMER, V.A.; LOBACH, M.I.;  
TINIYAKOVA, Ye.I.; YAKOVLEV, V.A.

Stereospecific polymerization of butadiene by catalytic systems  
based on  $\pi$ -allyl complexes of nickel. Dokl. AN SSSR 161 no.3:  
583-585 Mr '65. (MIRA 18:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo  
kauchuka im. S.V.Lebedeva i Institut neftekhimicheskogo sinteza  
im. A.V.Topchiyeva AN SSSR.

AUTHORS: Tinyakova, Ye. I., Khrennikova, Ye. K., SOV/ 79-28-6-46/63  
Dolgoplosk, B. A.

TITLE: Reactions of Free Radicals in Solution (Reaktsii svobodnykh radikalov v rastvore) XIV. The Formation of Free Radicals in the Decomposition of Hydrogendisulfide and Their Reactions With  $\alpha$ - and  $\beta$ -Olefines (XIV. Obrazovaniye svobodnykh radikalov pri raspade dvusernistogo vodoroda i ikh reaktsii s  $\alpha$ - i  $\beta$ -olefinami)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 6, pp. 1632-1637 (USSR)

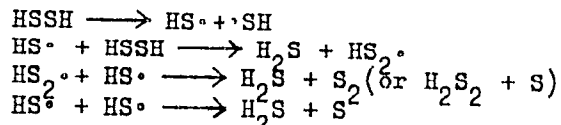
ABSTRACT: The present report deals with the reactivity of the  $\cdot$ SH radicals with  $\alpha$ - and  $\beta$ -olefines; this is of great interest as they play an important part in the sulfur vulcanization process (Ref 4). Hydrogen disulfide was used as source, so to say, of the  $\cdot$ SH radicals; the former easily decomposes into  $H_2S$  and S, which proceeds especially intensely in the presence of alkali liquors and other compounds of basic character. This decomposition also takes place equimolecularly in organic solvents, such as xylene, toluene, ethylbenzene

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SOV/79-28-6-46/63

Reactions of Free Radicals in Solution. XIV. The Formation of Free Radicals in the Decomposition of Hydrogendisulfide and Their Reactions With  $\alpha$ - and  $\beta$ -Olefines

etc.; in this connection it must be noted that in the vulcanization of rubber no formation of hydrogen sulfide was observed. Apparently the decomposition of  $H_2S_2$  takes place according to the chain mechanism through the stage of the  $\cdot SH$ - and  $\cdot S_2H$  radicals, as is the case with hydrogen peroxide:



The radical character of this reaction was proved by the decomposition of the hydrogen disulfide in the presence of an acceptor for free radicals, the nitric oxide. In the case of a heating in ethylbenzene solution at 70° and a simultaneous passage of gaseous NO no formation of  $H_2S_2$  takes place. Earlier it was shown that hydrogen sulfide does not enter reaction with NO on the same conditions. The decomposition of hydrogen disulfide in various olefines, containing external and internal double bonds, was investigated. The relative reactivity of the olefines was determined ac-

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Reactions of Free Radicals in Solution. XIV. The Formation of Free Radicals in the Decomposition of Hydrogendisulfide and Their Reactions With  $\alpha$ - and  $\beta$ -Olefines

30W79-28-6-46/63

According to the composition of the final products and according to the amount of the forming hydrogen sulfide (Tables 1 and 2). In the decomposition of hydrogen disulfide in olefines having a double vinyl bond ( $\alpha$ -pentene, styrene, isoprene) the formation of  $H_2S$  is completely obstructed, which is only partly the case with  $\beta$ -pentene, cyclohexene. The conversion products of  $H_2S_2$  with  $\alpha$ - and  $\beta$ -pentenes, and cyclohexenes were separated and characterized, and their mechanism of formation were checked. Concluding it may be stated that the reactivity of the  $\alpha$ -olefines with respect to the given radicals is by far higher than that of the  $\beta$ -olefines. There are 1 figure, 2 tables, and 14 references, 10 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka  
(Institute of High Molecular Compounds, AS USSR and All-Union Scientific Research Institute of Synthetic Rubber)

Card 3/4

SOV79-28-6-46/63

Reactions of Free Radicals in Solution. XIV. The Formation of Free Radicals in the Decomposition of Hydrogendisulfide and Their Reactions With  $\alpha$ - and  $\beta$ -Olefines

SUBMITTED: September 2, 1957

1. Free radicals--Chemical reactions

Card 4/4

5(3)

SOV/20-124-3-29/67

AUTHORS: Tinyakova, Ye. I., Dolgoplosk, B. A., Corresponding Member,  
Academy of Sciences, USSR, Marey, A. I., Al'tshuler, M. Z.

TITLE: The Production of Crystalline 1-4-Transpolybutadiene and  
-Polyisoprene and the Investigation of Their Properties  
(Polucheniye kristallicheskikh 1-4-trans-polibutadiyena i  
poliizoprena i izucheniye ikh svoystv)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 3, pp 595-597  
(USSR)

ABSTRACT: A description is given of the production of the symmetric  
1-4-transpolymers of butadiene and isoprene by the aid of  
oxide catalysts, in particular of chromium oxides on alu-  
minium silicate. - Polyisoprene is stable, its infrared spec-  
trum shows that 99% of the polymer chain possesses the  
1-4 trans-configuration. The iodine number corresponds with  
the theory. Due to the uniform structure, the polymer crys-  
tallizes, which could be confirmed by the x-ray photograph.  
This x-ray photograph is analogous to that of natural  $\beta$ -gutta  
percha. - Polybutadiene is a crystalline-fibrous substance.  
As it is difficultly soluble it was pressed into a film

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SOV/20-124-3-29/67  
The Production of Crystalline 1-4-Transpolybutadiene and -Polyisoprene  
and the Investigation of Their Properties

prior to the photographing of its infrared spectrum. The spectrum confirms the 1-4 trans-configuration. A curve of the deformation on repeated intensive heating was plotted. A table gives the density changes brought about by heating. The infrared spectrum of polyisoprene was photographed by K. V. Mel'son, and that of polybutadiene by Ye. I. Pokrovskiy, and the x-ray photographs were made by L. A. Volkova. . There are 2 figures, 1 table, and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR  
(Institute of High Molecular Compounds of the Academy of Sciences, USSR)  
Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva  
(All-Union Research Institute for Synthetic Caoutchouc imeni S. V. Lebedev)

Card 2/3

5(1)

AUTHORS:

Kutsenok, B. Ye., Kulakova, M. N., SOV/20-125-5-33/61  
Tinyakova, Ye. I., Dolgoplosk, B. A., Corresponding  
Member, AS USSR

TITLE:

Initiation of the Polymerization Process in Emulsions  
Under the Influence of Isopropyl-benzene-hydroperoxide and  $\text{SO}_2$   
(Initsirovaniye protsessa polimerizatsii v emul'siyakh pod  
vliyaniyem gidroperekisi izopropilbenzola i  $\text{SO}_2$ )

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5,  
pp 1073-1076 (USSR)

ABSTRACT:

It was proved already earlier (Ref 1) that the reaction  
between the substances mentioned last in the title proceeds  
rapidly in hydrocarbon media. It leads to the formation of  
unsaturated polymers or to the formation of polysulfone if  
it proceeds in a styrene solution at  $\text{SO}_2$  excess (Ref 2).

Therefrom it may be assumed that the reaction of hydroperoxide  
and  $\text{SO}_2$  proceeds through an intermediate stage of the free  
radicals, in analogy to many other known redox reactions. The  
present paper deals with the investigation of the effective

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Initiation of the Polymerization Process in Emulsions SOV/20-125-5-33/51  
Under the Influence of Isopropyl-benzene-hydroperoxide and  $\text{SO}_2$

mechanism of this reaction system as well as with the clarification of its possibility of use for initiating the polymerization of monomers in aqueous emulsions and acid media at low temperature. Investigation of the composition of the interaction products of isopropyl-benzene-hydroperoxide with  $\text{SO}_2$ . The process mentioned proceeds instantaneously in an octane-water emulsion between 0 - 70°.  $\text{SO}_2$  and hydroperoxide are consumed in equimolar quantities (Table 1). If the reaction proceeds in the presence of  $\alpha$ -pentene or  $\alpha$ -methyl-styrene, which are known to affiliate easily free radicals (Refs 3, 4), sulfo acids are detected in the interaction products (Table 2). Therefore the radical  $\text{SO}_3\text{H}$  forms one of the intermediate products of the reaction. The formation of sulfuric acid as a final product of the oxidation may be due to the reaction of the disproportionation of the radicals. If the acceptors of free radicals lack, the reaction proceeds readily in the direction of the formation

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Initiation of the Polymerization Process in Emulsions    SOV/20-125-5-33/61  
Under the Influence of Isopropyl-benzene-hydroperoxide and  $\text{SO}_2$

of sulfuric acid and carbinol. Initiation of the polymerization under the influence of hydroperoxide and  $\text{SO}_2$ . Since the interaction of the components in aqueous emulsions and in a homogeneous medium proceeds rapidly, the first experiments of the aforesaid initiation do not yield positive results. The high concentration of active centers at the beginning of the process caused short reaction chains and the end of polymerization. It is known that such systems may be used for initiating the polymerization only by regulating the rate of interaction of the components by different methods. This is achieved especially at  $0^\circ$  with a gradual dosage of the components. Figure 1 shows the yields of the polymer in the presence of 0.6 % of the hydroperoxide mentioned (computed with respect to the styrene weight) and at an equivalent quantity of 0.1 N  $\text{SO}_2$ -solution according to the sequence of the addition of the components. This shows that with the addition of hydroperoxide and  $\text{SO}_2$  the polymerization ceases instantaneously

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Initiation of the Polymerization Process in Emulsions SOV/20-125-5-33/61  
Under the Influence of Isopropyl-benzene-hydroperoxide and  $\text{SO}_2$

(at the beginning of the reaction) (Curve 1). The process is quickest at a gradual dosage of the two components. The yield amounts here to 87 % at  $0^\circ$  within 4 hours (Curve 2). Figure 2 shows the kinetic polymerization curves of styrene in the presence of various quantities of hydroperoxide. Above 0.3 % and more of the concentration of the latter the polymerization ceases practically. A complete consumption of hydroperoxide and  $\text{SO}_2$  corresponds to this moment. The polymerization begins again at a temperature rise up to  $30^\circ$  (Fig 3). Therefore an intermediate compound is produced under certain conditions which is able to initiate the polymerization at higher temperatures. There are 3 figures, 2 tables, and 8 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskogo kauchuka  
im. S. V. Lebedeva (Scientific Research Institute of  
Synthetic Rubber imeni S. V. Lebedev)

SUBMITTED: January 5, 1959  
Card 4/4

18(5)  
5(1)

S/019/59/000/22/218/439  
D003/D002

AUTHORS: Yevdokimov, V.F., Dolgoplosk, B.A., Poddubnyy, I.Ya., Tynyakova,  
Ye.I. and Aver'yanov, S.V.

TITLE: A Method of Manufacturing Titanium Trichloride<sup>1</sup>, Lower Titanium Chlo-  
rides and Metallic Titanium

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 22, p 53 (USSR)

ABSTRACT: Class 40a, 4650. Nr 124123<sup>18</sup> (619889/22 of 18 February 1959). No  
description is given.

Card 1/1

*Tinyakova, Ye. I.*

*no*

The International Symposium...

B/190/61/003/002/012/012  
B101/2215

Sovetskiy Ministrov SSSR po khimii (State Committee of Chemistry of the Council of Ministers USSR), A. N. Nesmeyanov, Academician, and I. G. Petrovskiy, Academician, Director of the Moscow University welcomed the delegates. V. A. Kargin, Academician, chairman of the Organisation Committee gave a survey on the main problems of polymer chemistry in his opening speech. Second plenary session: M. N. Semenov, Academician: "The collective interaction in processes of polymerization at low temperatures and in polymers with conjugate bonds". The First Section dealt with problems of synthesizing polymers. Lectures by Soviet-bloc scientists: Ye. A. Muzina, A. I. Perel'man, A. V. Topchiyev, B. A. Krentsel' (USSR) talked about synthesizing stereoregular polymers of ring-containing  $\alpha$ -olefins. Ye. I. Tinyakova, B. A. Dolgoplosk, T. G. Zhuravleva, R. N. Kovalevskaya, T. M. Kuren'gina (USSR): On the synthesis of cis- and transpolymers of dienes on oxide catalysts. A. V. Golubeva, M. P. Usmanova, A. A. Yanaheydt (USSR): Synthesis of copolymers from styrene,  $\alpha$ -methyl-styrene, and vinyl naphthalene. T. Ya. Kefeli, G. V. Karolev, Yu. M. Filippovskaya (USSR): On polyester acrylate. The synthesis of these polymers had been developed under the supervision of A. A. Berlin. M. Bogdanetsky, I. Miesiva, A. Sternschuss, V. Zvonár (CSR): Copolymerization of styrene with unsaturated polyesters. Ye. R. Zil'berman.

Card 2/10

14th SYMPOSIUM ON MACROMOLECULAR CHEMISTRY, held in Moscow on the suggestion of the USSR and decision of the IUPAC (International Union of Pure and Applied Chemists) 14-18 June 1960; Vysokomolekularnyye Soedineniya, Vol 3, No 3, 1961, pp324-28, Engl

5.3200

82044  
S/062/60/000/02/08/012  
B003/B066

AUTHORS: Dolgoplosk, B. A., Yerusalimskiy, B. L., Kuren'gina, T. N.,  
Tinyakova, Ye. I.

TITLE: Reactions of Free Radicals in Solutions. 15th Report.  
Destruction Mechanism of Polymers by Free Radicals

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1960, No. 2, pp. 311 - 316

TEXT: The authors investigated the destruction of polyisobutylene dis-  
solved in ethyl benzene under the action of disulfides, benzoyl peroxide,  
isopropyl benzene-hydroperoxide, triazenes, dimethyl-diphenyl-tetrazene,  
iron- and cobalt naphthenate. The destructive effect of the individual  
agents may be seen from the diagrams in Figs. 1, 2, and 3. The following  
conclusions may be drawn from the investigations and pertinent papers by  
other authors: The destructive effect is most intense in such free  
radicals as are especially active in the reaction of H-separation. The  
destruction takes place in such a manner that first a H-atom is separated  
from the polymer chain and, secondly, the C-C bonds of the polymer radical

Card 1/2

Reactions of Free Radicals in Solutions.

15th Report. Destruction Mechanism of Polymers  
by Free Radicals

<sup>8204</sup>  
S/062/60/000/02/08/012  
B003/B066

thus formed are spontaneously freed. The authors mention a paper by  
L. M. Romanov (Ref. 2). There are 3 figures and 14 references: 8 Soviet,  
4 American and British, and 2 German.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk  
SSSR (Institute of High-molecular Compounds of the Academy  
of Sciences USSR)

SUBMITTED: June 19, 1958

Card 2/2

DOLGOPLOSK, B. A., YERUSALIMSKIY, B. L., KROPUCHEVA, Ye. N.,  
TINYAKOVA, Ye. L.

"Structure of Diene Polymers as a Function of the Nature  
of Catalytic Systems"

Report presented at the Conference on International Symposium  
on Macromolecular Chemistry. Montreal, Canada, 27 July to 1 August 61.

^Institute for Higher Molecular Compounds, Akademia  
Nauk, SSSR, Leningrad, USSR.

S/020/62/146/004/013/015  
B117/B186

AUTHORS: Dolgoplosk, B. A., Corresponding Member AS USSR, Tinyakova, Yu. I.

TITLE: Mechanism of the action of complex catalysts during polymerization

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 4, 1962, 856-859 ✓

TEXT: Here the usual assumption that polymerization in the presence of mixed catalysts (such as those of Ziegler, Natta, etc.), is chiefly characterized by a coordination-anion system is challenged. From a number of well-known reactions it can be shown that the cation mechanism too may prevail in polymerization of many systems, which contradicts the concept of chain growth via the C-Al bond. The effectiveness of the cation mechanism is corroborated by: (1) the ability of some mixed catalysts to initiate cis-trans-isomerism in unsaturated polymers and the polymerization of isobutylene, vinyl ether, and  $\beta$ -butene; (2) the positive action of water, HCl,  $AlCl_3$ , and alkyl halides on the polymerization of some compounds. According to a scheme developed by G. Natta (J. Inorg. and Card 1/3

Mechanism of the action of ...

S/020/62/146/004/013/015  
B117/B186

Nucl. Chem., 8, 86, 1960; Tetrahedron, 8, 8 (1960)) fragments of the initial organo-aluminum compound are assumed to remain at one of the ends of the polymer chain, which do not directly participate in the chain growing process but which might be connected with the active centers. This scheme may help to explain the incorporation of organo-aluminum compounds into the polymer chain and the possible development of a cation type polymerization process when an anion type C - Al bond is present. This is an indication of possible participation of organo-aluminum compounds in the chain rupture. It is shown that, when the chain breaks as a result of interaction between the active "cation" end and the inactive "anion" end, annular polymer molecules may sometimes form. In this case, the active center regenerates. The possibility of such a reaction is revealed by the polymerization of butadiene with  $\text{TiCl}_4 - \text{R}_2\text{AlCl}$ , whereby a cyclic trimer is obtained in an almost quantitative yield. This may be taken as proof that the two carbon ends of the chain are oppositely charged. It is noted that the statement made above does not exclude the anion type of some coordination systems, for example, organo-aluminum compounds and alkoxy compounds of titanium and molybdenum. The polymerization of these compounds presumably takes place via the

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Mechanism of the action of ...

S/020/62/146/004/013/015  
B117/B186

$\delta$ - $\delta$ +  
C-Me bond.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute  
of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 9, 1961

Card 3/3

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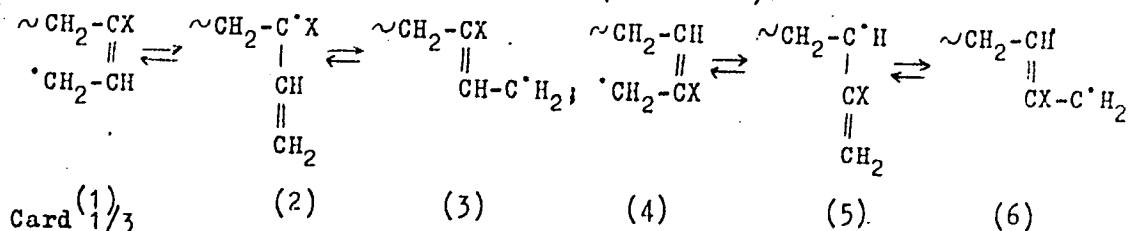
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S/020/62/146/002/008/013  
B101/B144

AUTHORS: Dolgoplosk, B. A., Corresponding Member AS USSR,  
Tinyakova, Ye. I.

TITLE: Polymerization mechanism of dienes and the structure of  
the polymer chain

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 2, 1962, 362-365

TEXT: The effect produced on the structure of the resulting polymer by  
the following configurations of the monomer link at the growing chain end  
during the polymerization of butadiene and its 2-derivatives is discussed  
on the basis of previous publications (see below):



Polymerization mechanism of ...

S/O2C/62/146/002/005/C13  
B101/B144

For radical and cation mechanisms, the configurations (3) or (6) assumed, for polymerization by alkali alkyls, the configurations (2) or (5). Free ions do not form when combined catalysts of the Ziegler type are used. The formation of 1,4-trans links follows a cationic coordination

mechanism  $(A)^{(-)}CH_2^{\sim}$ , and that of 1,2 links follows an anionic coordination

mechanism  $[A]^{(+)}CH_2^{\sim}$ . The former is suited for the polymerization of

cationic monomers such as vinyl alkyl ethers and isobutylene, the latter for the polymerization of anionic monomers such as vinyl cyanide, vinyl chloride, etc. In the presence of anionic active centers, it is unlikely that the growing chain end reacts with double bonds in the chain itself to form cyclic side groups. Cis-trans isomerization of the links takes place in radical mechanisms, especially in the cationic mechanism of initiation. In anionic mechanisms it may occur under the action of a cation belonging to the organometallic compound of the catalyst complex. The investigation of these problems in Ziegler-type anionic coordination systems is important. The most important English-language references are: J. Maynard, W. Mochel, J. Polym. Sci., 13, 251 (1954); J. Kuntz, A.

Card 2/3

Polymerization mechanism of ...

S/020/62/146/002/008/013  
B101/B144

Gerber, J. Polym. Sci., 42, 299 (1960); A. V. Tobolsky, C. E. Rogers,  
J. Polym. Sci., 40, 73 (1959); T. S. Lee, I. M. Kolthoff, M. A. Mairs,  
J. Polym. Sci., 3, 66 (1948).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute  
of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 9, 1962

(card 3/3

38280

S/190/62/004/006/006/026  
B101/3110

5.3830

AUTHORS:

Tinyakova, Ye. I., Dolgoplosk, B. A., Kuren'gina, T. N.

TITLE:

Polymerization under the action of catalytic systems containing cobalt or tungsten carbonyls and diethyl aluminum halide

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, v. 4, no. 6, 1962, 828-834

TEXT: The authors investigated the catalytic effect of the precipitate formed when  $\text{Co}(\text{CO})_4$  or  $\text{W}(\text{CO})_6$  dissolved in hydrocarbons are mixed with  $\text{Al}(\text{C}_2\text{H}_5)_2\text{Cl}$ . The following were polymerized with the cobalt complex (ratio carbonyl :  $\text{R}_2\text{AlCl}$  = 1 : 5): isoprene (20°C, 2.5 hr, polymer yield 31%), butadiene (50°C, 1.5 hr, yield 25%; 2.5 hr, yield 40%), styrene (20°C, 3 hr, 29.8%),  $\alpha$ -methyl styrene (80°C, 42 hr, 47.2%), and  $\alpha$ -butene (50°C, 48 hr, 7%). The investigation of the structure of butadiene polymerized with the cobalt or tungsten complexes gave the following results irrespectively of the temperature (40-50°C) and of the ratio

Card 1/2

Polymerization under the ...

S/190/62/CCA/006/006/026  
B101/3110

carbonyl :  $R_2AlCl$  (1 : 2.5 to 1 : 18): 85-87% cis-1,4 bonds, 5-8% trans-1,4 bonds, and 5-7% 1,2 bonds. Isoprene polymerized with the cobalt complex (20-50°C) contained 61-62% cis-1,4 bonds, 22-23% trans-1,4 bonds, and 14-16% 3,4 bonds. An analysis of the precipitate formed from  $Co(CO)_4$  and  $Al(C_2H_5)_2Cl$  showed: ratio Co : Al between 1 : 1.25 and 1 : 3; ratio Al : Cl ~ 1 : 1; ratio CO : Co ~ 1; ratio  $C_2H_5$  : Al ~ 1 : 1. Since no gases are released during the formation of the precipitate, a reaction of CO with  $Al(C_2H_5)_2Cl$  is assumed, similar to that occurring with organolithium and organomagnesium compounds. The absorption of CO by  $Al(C_2H_5)_2Cl$  and the formation of sec-amyl alcohol were proved experimentally. The

formula:  $CoCO \cdot AlR_2Cl \cdot R_2C \begin{matrix} \swarrow OAl(R)Cl \\ \searrow Al(R)Cl \end{matrix}$  is suggested for the catalytic complex.

There are 1 figure and 3 tables.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR)

SUBMITTED: April 1, 1961  
Card 2/2

SOV/4982

TINYAKOVA, Ye. I.

International symposium on macromolecular chemistry, Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii SSSR, Moskva, 14-18  
iyunya 1960 g.; doklady i avtoreferaty. Sektsiya I. (International Sympos-  
ium on Macromolecular Chemistry Held in Moscow, June 14-18, 1960; Papers and  
Summaries. Section I.) [Moscow, Izd-vo AN SSSR, 1960] 346 p. 5,500 copies  
printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry,  
Commission on Macromolecular Chemistry

Tech. Ed.: T. V. Polyakova.

PURPOSE: This collection of articles is intended for chemists and researchers  
interested in macromolecular chemistry.

COVERAGE: This is Section I of a multivolume work containing scientific papers  
on macromolecular chemistry in Moscow. The material includes data on the  
synthesis and properties of polymers, and on the processes of polymerization,

Card 1/9

PROVED FOR RELEASE

International Symposium (Cont.)

SOV/4982

copolymerization, polycondensation, and polyrecombination. Each text is presented in full or summarized in French, English, and Russian. There are 47 papers, 28 of which were presented by Soviet, Rumanian, Hungarian, and Czechoslovakian scientists. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

Pino, P., G. P. Lorenzi, and L. Lardicci (Italy). Isotactic Polymers of Optically Active $\alpha$ -Olefins	5
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<u>Tinyakova, Ye. I.</u> , B. A. Dolgoplosk, T. G. Zhuravleva, R. N. Kovalevskaya, and T. N. Kuren'gina (USSR). The Synthesis of Cis- and Trans-Diene Polymers on Oxide Catalysts and a Study of Their Structure and Properties	13
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Card 2/9	

TINYAKOVA, Ye.I.; DOLGOPLOSK, B.A.; VYDRINA, T.K.; ALFEROV, A.V.

Cation activity of the components in a "cobalt" system and the nature of the end groups in a polymeric chain. Dokl. AN SSSR 152 no.6:1376-1378 O '63. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR. 2. Chlen-korrespondent AN SSSR (for Dolgoplosk).

DOLGOPLOSK, B.A.; TINYAKOVA, Ye.I.

Certain regularities in the process of ionic polymerization.  
Dokl. AN SSSR 154 no.4:857-860 F '64. (MIRA 17:3)

1. Institut neftekhimicheskogo sinteza AN SSSR. 2. Chlen-korrespondent AN SSSR (for Dolgoplosk).

ACCESSION NR: AP4012970

S/0020/64/154/004/0857/0060

AUTHORS: Dolgoplosk, B.A. (Corresponding member); Tinyakova, Ye. I.

TITLE: Certain principles of the ionic polymerization process

SOURCE: AN SSSR. Doklady\*, v. 154, no. 4, 1964, 857-860

TOPIC TAGS: ionic polymerization, cationic polymerization, coordination ionic polymerization, radical polymerization, polymerization rate, polymerization inhibition, isobutylene propylene system, 2,3-dimethylbutadiene inhibition polymerization, stereospecific butadiene polymerization, conjugated diene olefin system, cyclopentadiene inhibition polymerization

ABSTRACT: The relationship that the reactivity of the monomer increases with decreasing reactivity of the radical and the rate of homopolymerization or chain growth is discussed. It is applicable to ionic and coordination-ionic systems as well as to radical polymerization. Various examples are cited to support the conclusion that small amounts of a more active monomer have an inhibiting

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ACCESSION NR: AP4012970

effect on the cationic polymerization process: small amounts of isobutylene or vinylalkylethers inhibit polymerization of less active monomers such as propylene, butadiene, or styrene; 2,3-dimethylbutadiene retards polymerization of butadiene; ethylene "regulates" the stereospecific polymerization of butadiene in a Co catalyzed system, lowering the molecular weight of the polybutadiene; in mixtures of conjugated dienes with ethylene or  $\alpha$ -olefins, the more active diene retards polymerization of the olefin; in the  $R_3Al + TiCl_4$  system, which is effective in homopolymerization of dienes and of cyclopentadienes, addition of a small amount (0.01%) of cyclopentadiene inhibits polymerization of butadiene. Orig. art. has: 1 figure and 5 sets of formulae.

ASSOCIATION: Institut neftekhimicheskogo sinteza, Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences SSSR)

SUBMITTED: 16Oct63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: CH

NO REF SOV: 009

OTHER: 005

Card 2/2

DOLGOPLOSK, B.A., akademik; BABITSKIY, B.D.; KORMER, V.A.; LOBACH, M.I.;  
TINYAKOVA, Ye.I.

Link formation mechanism in the stereospecific polymerization  
of dienes. Dokl. AN SSSR 164 no.6:1300-1302 O '65.

(MIRA 18:10)

1. Institut neftekhimicheskogo sinteza AN SSSR i Vsesoyuznyy  
nauchno-issledovatel'skiy institut sinteticheskogo kauchuka  
im. S.V.Lebedeva.

L 2694-65 EWT(m)/EPF(c)/EWP(j)/T RM

ACCESSION NR: AP5023367

UR/0020/65/164/001/0119/0121

AUTHORS: Sharayev, O. K.; Alferov, A. V.; Tinyakova, Ye. I.; Dolgoplosk, B. A.  
(Academician)

TITLE: Transition from metal hydrides to  $\pi$ -allyl complexes and the initiation of the stereospecific polymerization of butadiene

SOURCE: AN SSSR. Doklady, v. 164, no. 1, 1965, 119-121

TOPIC TAGS: polymer, catalysis, metal hydride, polymerization, stereospecificity, butadiene

ABSTRACT: The reaction of nickel hydrides with butadiene was investigated. It was found that nickel hydrides initiate the cis-polymerization (90%) of butadiene through a stage of  $\pi$ -crotyl complex formation. In other reactions the nickel amount passing to benzene solution was 20% of that calculated for unreacted ethyl magnesium bromide. The gaseous products evolved during the decomposition of the crotyl derivatives of nickel were mixtures of butenes (with a predominant amount of  $\alpha$ -butene). The total yield of butenes was more than 1 mole per mole of organonickel compound. The stereospecific polymerization of butadiene with the formation of 1,4-polymer was investigated using nickel on kieselguhr and Raney

Card 1/2

L 2684-66

ACCESSION NR: AP5023367

4  
nickel as catalysts (at 32-42C, for 3 hours) and using benzene and heptane as solvents (at 45% by volume butadiene concentration) in the presence of  $TiCl_4$ ,  $VCl_4$ ,  $AlCl_3$ . The tabulated data show that the nature of the metal in the Lewis acid does not affect the microstructure of the polymer chain. The polymerization is effective in both benzene and heptane. Considering the data of nickel transition reacted with butadiene to  $\pi$ -crotyl derivatives, it can be assumed that analogous reactions occur on the surface of nickel catalysts. Orig. art. has: 1 table.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva, Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences, SSSR) 44.55

SUBMITTED: 27Mar65

ENCL: 00

SUB CODE: GC, OC

NO REF SOV: 004

OTHER: 008

Card 2/2

L 52264-65 BPF(c)/ENP(j)/EWT(m)/T Pc-4/Pr-L ESD RM  
 ACCESSION NR: AP5010832 UR/0020/65/161/004/0636/0838

AUTHOR: Babitskiy, B. D.; Golenko, T. G.; Kormer, V. A.; Skoblikova, V. I.;  
 Tiryakova, Ye. I.; Dolgoplosk, B. A. (Academician)

TITLE: Stereospecific polymerization of butadiene in the presence of catalyst systems based on  $\pi$ -cyclopentadienyl complexes of nickel

SOURCE: AN SSSR. Doklady, v. 161, no. 4, 1965, 836-838

TOPIC TAGS: stereospecific polymerization, polymerization, butadiene polymerization, butadiene, pi-complex

ABSTRACT: Polymerization of dienes was studied with catalyst systems composed of  $\pi$ -cyclopentadienyl Ni-complexes and Lewis acids. These systems represent a new group of stereospecific polymerization catalysts as they do not contain compounds with a  $\sigma$ -metal-hydrocarbon bond. Benzene solutions of bis- $\pi$ -cyclopentadienyl Ni-complex and  $\pi$ -cyclopentadienyl- $\pi$ -cyclopentenyl Ni-complexes along with metal halides are effective catalysts for stereospecific polymerization. The solutions of bis- $\pi$ -cyclopentadienyl Ni-complex and Lewis acids are also effective catalysts for stereospecific polymerization. In all cases the stereospecificity of polymerization was high. The results of the experiments were discussed.

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L 52264-65

ACCESSION NR: AP5010832

the test duration was 17 hours. Butadiene concentration in the total solution was 2.5 mol/l and concentration of metal halides was  $5 \times 10^{-3}$  mol/l. Polymers were precipitated with HCl acidified ethyl alcohol. The yield and molecular weight of the polymers is a function of the type of Lewis acid used and the ratio between individual components of the catalyst system. A  $(\pi\text{-C}_2\text{H}_5)_2\text{Ni-TiCl}_4$  catalyst system yielded a polymer containing about 90% cis-1,4 groups, 5 to 10% trans-1,4 groups, and no side vinyl groups. Highest polymer yields were obtained with a Ni:Ti ratio of 1. The polymer molecular weight was not higher than 100,000. The  $(\pi\text{-C}_2\text{H}_5)_2\text{Ni-VC1}_4$  catalyst system yields polybutadiene containing up to 96% cis-1,4 groups. Maximum catalytic activity results from a Ni:V ratio of 1, the molecular weight of the polymer is 400,000 to 500,000. The catalyst based on tin-, molybdenum-, and tungsten halides yield polymers with 20 to 50% trans-1,4 groups. Depending upon reaction conditions,  $(\pi\text{-C}_5\text{H}_5)_2\text{Ni-AlX}_3$  catalysts (where X is Cl or Br) yield polybutadiene of 20,000 to 50,000 molecular weight. Catalysts based on  $\pi$ -cyclopentadienyl- $\pi$ -cyclopentenyl Ni-complexes perform similarly to bis- $\pi$ -cyclopentadienyl based systems; both yield polybutadiene containing 92-95% cis-1,4 groups. "The authors are highly indebted to I. G. Kolokoltsava for synthesis of the bis- $\pi$ -cyclopentadienyl Ni-complex." Orig. art. has: 2 tables.

Card 2/3

L 52264-65

ACCESSION NR: AP5010832

2

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo  
kauchuka im. S. V. Lebedeva (All-Soviet Institute of Synthetic Rubber); Institut  
neftekhimicheskogo sinteza akademii nauk SSSR (Institute of Petrochemical Synthesis,  
Academy of Sciences SSSR)

SUBMITTED: 21Dec64

ENCL: 00

SUB CODE: GC, MT

NO REF SOV: 002

OTHER: 002

Card 3/3 P.B

L 4482-65 EWT(m)/EPF(c)/EWP(j)/T/ENF(t)/ENF(b) IJP(c) JD/HW/L  
 ACCESSION NR: AP5021280 UR/0020/65/163/005/1147/1150

AUTHORS: Vinogradov, P. A.; Dolgoplosk, B. A. (Academician); Zgonnik, V. N.;  
 Parenago, O. P.; Tinyakova, Ye. I.; Turov, B. S.

TITLE: The role of electron-donor additives, water, and alkylating agents in the stereospecific polymerization of butadiene under the influence of a cobalt catalytic system

SOURCE: AN SSSR. Doklady, v. 163, no. 5, 1965, 1147-1150

TOPIC TAGS: stereospecific polymerization, polymer, butadiene, cobalt, catalyst

ABSTRACT: The object of the investigation was to enlarge the currently available information concerning the stereospecific catalytic activity of cobalt catalytic systems (B. S. Turov and P. A. Vinogradov i dr., DAN, 155, 874, 1965). The polymer studied was butadiene. The experimental results are shown graphically in Figs. 1 and 2 on the Enclosure. It is concluded that the addition of  $AlCl_3$ ,  $RAlCl_2$ ,  $Br_2$ ,  $H_2O$ ,  $CH_2 = CH - CH_2$  halogen,  $RCl - Al - O - Al - RCl$  increases the formation of 1,4 cis rings, the molecular weight, and the rate of polymerization, whereas the addition of  $R_3Al$ ,  $RSR$ ,  $ROR$ ,  $R_3N$ ,  $KCl$ , and  $NaCl$  decreases the number

Card 1/4

L 64482-65

ACCESSION NR: AP5021280

of 1,2 rings, the molecular weight, and the rate of polymerization. Orig. art.  
has: 1 table, 3 graphs, and 3 equations. 3

ASSOCIATION: Institut neftekhmicheskogo sinteza, Akademii nauk SSSR (Institute  
for Petrochemical Synthesis, Academy of Sciences SSSR)

SUBMITTED: 15Mar65

ENCL: 02

SUB CODE: CC

NO REF SOV: 007

OTHER: 005

Card 2/4

L 04202-67 EWT(m)/EWP(j)/T IJP(c) RM  
ACC NR: AP6030022 (A)

SOURCE CODE: UR/0020/66/169/005/1102/1103

AUTHOR: Oreshkin, I. A.; Chernenko, G. M.; Tinyakova, Ye. I.; Dolgoplosk, B. A.  
(Academician)

ORG: Institute of Petrochemical Synthesis im. A. V. Topcheviy, Academy of Sciences  
SSSR (Institut neftekhimicheskogo sinteza Akademii nauk SSSR)

TITLE:  $\pi$ -allyl derivatives of chromium and titanium as catalysts for stereospecific  
polymerization of butadiene

SOURCE: AN SSSR. Doklady, v. 169, no. 5, 1966, 1102-1103

TOPIC TAGS: chromium, titanium, polymerization catalyst, polybutadiene

ABSTRACT: Stereospecific polymerization of butadiene was studied at 20-80°C using 2.7 mol/l concentration of butadiene in toluene and 0.2 mol/% (based on butadiene) of chromium and titanium triscrotylates as catalysts. The polymerization duration was 1-68 hr. In some experiments the catalysts were supplemented with  $\text{NiCl}_2$  ( $\text{MR}_3:\text{NiCl}_2 =$  from 1:8 to 1:24) with  $\text{TiJ}_4$  ( $\text{MR}_3:\text{TiJ}_4=1:1$ ), or with  $\text{O}_2$  ( $\text{MR}_3:\text{O}_2=1:0.5$ ). The chromium system was prepared by reacting anhydrous  $\text{CrCl}_3$  with crotylmagnesiumchloride in an ether toluene mixture (1:2 by volume) at -10° to -20°C. The titanium system was prepared by reacting anhydrous  $\text{TiCl}_3$  with biscrotyl magnesium in diethyl ether solvent at -5°C; the ratios of  $\text{TiCl}_3$  to R-Mg was from 5:1 to 12:1. The polymer yields varied from 6.1

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UDC: 542.952+541.64

ACC NR: AP6030022

to 100%. It was found that pure  $(C_4H_7)_3Cr$  or  $(C_4H_7)_3Ti$  yielded a polymer with 81-83% of 1,2-units. The addition of  $NiCl_2$  or  $TiJ_4$  to either chromium or titanium triscrotonate was found to result in a polymer with 85-93% of 1,4-cis units. In the presence of  $O_2$  or chromium oxide, the polymer showed 92.5-99% of 1,3-trans units. Orig. art. has: 2 tables.

SUB CODE: 07/

SUBM DATE: 18Jan66/

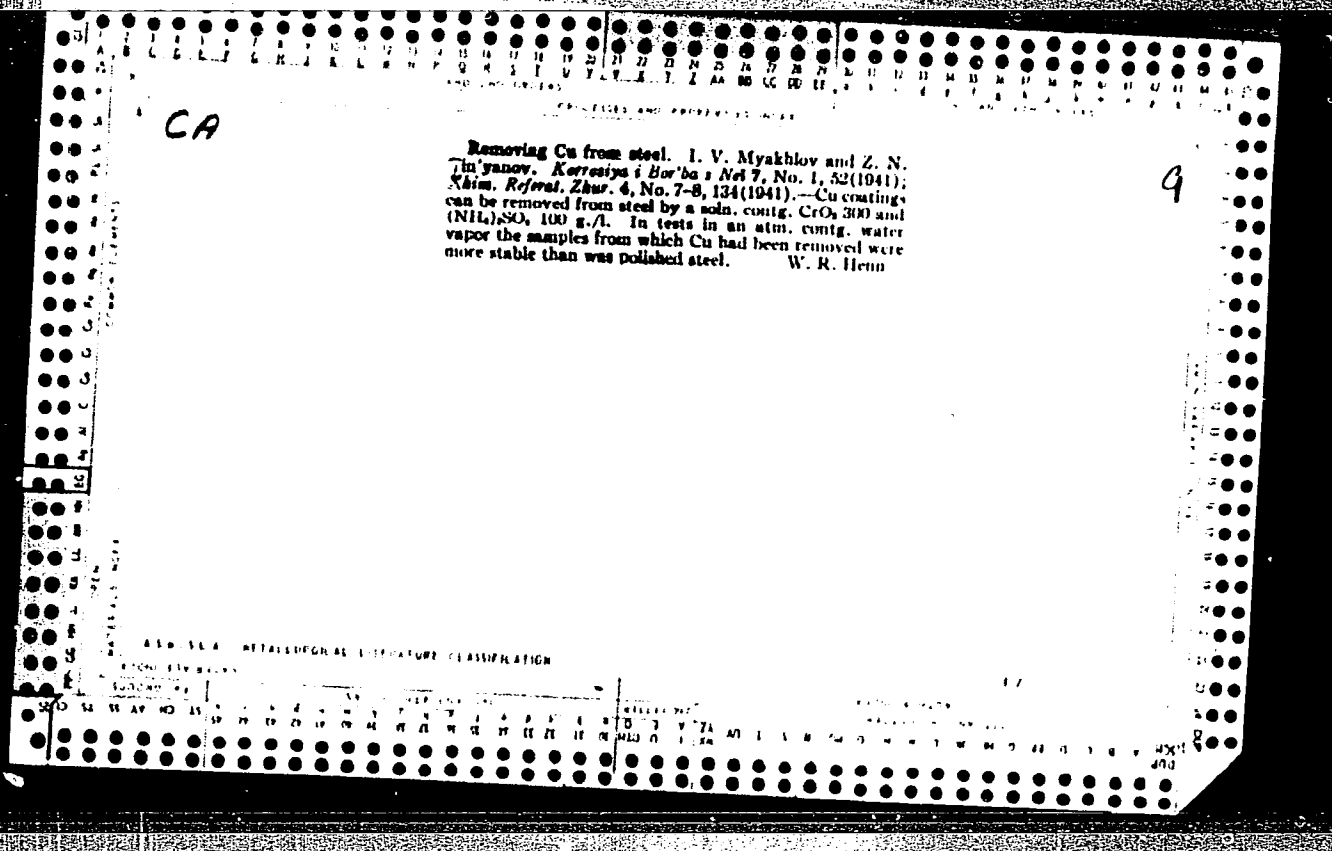
ORIG REF: 004/

OTH REF: 002

Card 2/2 LC

The influence of relative humidity and temperature on the degree of corrosion. Z. N. Tinyanov and I. V. Myakhliv. *Korrosiya i Borba s Nей* 5, No. 3-4, 44-0 (1939). — Samples of steel were kept at relative humidities of 80-100 and temps. of 24-30 and 30-40° for 30 days, then dried at 120°. Increase in weight in mg./sq. cm. was a measure of the degree of corrosion. All samples showed signs of corrosion after 48 hrs. In one sample at 85-100% humidity and 30-40° corrosion began during the first 24 hrs. Corrosion increases with relative humidity. Increase in humidity affects the metal more than does increase of temp. A steel contg. 0.70% Mn was corroded more than one contg. 1.14% C and one contg. Cr 3.80, W 18.2 and V 0.80%. These 2 steels were corroded equally.

C. S. Shapiro



KOLCHINSKAYA, I.D. [Kolchyns'ka, I.D.]; TIN'YANOVA, N.Z.; DRYNDINA, L.P.  
[Dryndina, L.P.]

Oxidative phosphorylation in *Bac. subtilis* and *Bac. mesentericus*.  
Mikrobiol.zhur. 26 no.4:33-37 '64.

(MIRA 18:10)

1. Institut mikrobiologii i virusologii AN UkrSSR.

KOLCHINSKAYA, I.D. [Kolchyns'ka, I.D.]; MEDVINSKAYA, L.Yu. [Medvins'ka, L.IU.];  
TIN'YANOVA, N.Z.

Effect of saline components of the medium on the amylase, catalase  
and peroxidase activity of Bac. subtilis and Bac. mesentericus.  
Mikrobiol.zhur. 26 no.4:29-33 '64.

(MIRA 18:10)

1. Institut mikrobiologii i virusologii AN UkrSSR.

MEDVINSKAYA, L.Yu. [Medvins'ka, L.IU.]; KOLCHINSKAYA, I.D. [Kolchyns'ka, I.D.];  
TIN'YANOVA, N.Z.

Effect of salt components of the medium on morphology, growth and  
protease activity of *Bac. subtilis* and *Bac. mesentericus*.  
Mikrobiol. zhur. 26 no.3:14-18 '64.

(MIRA 18:5)

1. Institut mikrobiologii i virusologii AN UkrSSR.

29

25

Mongolian sheep wool. III. Physical properties. M. Salto and T. Tixei. *Rep. Inst. Sci. Res., Manchou-kuo* 2, 171-85, 186-200, 201-219 (1938); cf. *C. A.* 31, 1623. —Tensile strength, elastic limit, Young's modulus, and breaking stress are higher for Mongolian wool than for merino wool of approx. the same diam. Removal of suint, or both suint and grease, from the wools decreases the first three properties, although the removal of grease alone results in an increase in these values. IV. Coarse wool. *Ibid.* 186-200. —When allowance is made for the presence of medulla in the coarse wool, fine and coarse Mongolian wools have almost the same elastic properties. If no account is taken of medulla in calculations, the apparent tensile strength and the elastic limit per unit area cross-section of coarse wool are approx.  $\frac{1}{2}$  those of fine wool. Relations between fiber diam. and proportion of medulla are derived. V. Behavior toward reagents. *Ibid.* 201-219. —The behavior of Mongolian sheep wool toward boiling  $H_2O$ , dil. alkali and dil. acid is compared with that of a merino wool of approx. the same diam., treated under the same conditions. Determinations of the amounts of N and S removed from the wools by the reagents show that Mongolian wool is more susceptible to their attack than is merino. The former adsorbs less  $H_2SO_4$  than the latter.

B. C. P. A.

COMMON ELEMENTS

OPEN

MATERIALS INDEX

A 18.31 A METALLURGICAL LITERATURE CLASSIFICATION

FROM SYMBLVA

147000 #1

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147000 #97

147000 #98

147000 #99

147000 #100

TINZBURG-KALININA, S.I.; VAKARINA, Ye.F.; SURNINA, T.I.

Formation of postvaccinal immunity against dysentery. Zhur.  
mikrobiol., epid. i immun. 33 no.11:71-76 N '62.

(MIRA 17:1)

1. Iz Moskovskogo instituta vaktsin i syvorotok imeni  
Mechnikova.

CA

13

Manchurian pig bristles. I. Yield and quality. Mitio Saito and Tadasige Tinzei. II. Macroscopical and microscopical structures and chemical composition. Mitio Saito, Tadasige Tinzei and Masaaki Kozima. III. Physical properties. Mitio Saito. IV. Methods of unhairing bristles. V. Influence of lime dipping on quality. Mitio Saito and Tadasige Tinzei. VI. Chemical treatment of bristles obtained by lime dipping. Mitio Saito, Tadasige Tinzei and Kunikazu Srizawa. VII. Necessity for existence of root in the bristles as merchandise. Mitio Saito and Tadasige Tinzei. *Rept. Inst. Sci. Research Manchoukuo* 3, 115-32, 133-44, 145-66, 157-73, 174-81, 182-93, 194-204 (1939). — Manchurian pig bristles are classified on the basis of quality, and data are given for the average yield of bristles per animal. Characteristic scale formation and pigmentation are revealed by microscopic examn., while elementary analysis and  $\text{NH}_4$ -acid distillation show that the bristles resemble other animal hairs, especially human hairs. Values for breaking stress, tensile strength, elongation, and bending elasticity of the bristles, which vary along the length of the bristle, are much greater than those for Mongolian coarse wool.

Methods of removing bristles from the skin are examd, by measuring the min. force required to extract a bristle. The "unhairing force" depends on the condition and thickness of skin, the type of pig and hair, and time and temp. of phys. and chem. treatment. Deterioration in quality of bristles results from unhairing processes, and the possibility of remedying this by subsequent chem. treatment is investigated. Explanations of certain trade practices are offered.

B. C. P. A.

SHEEP AND GOATS

**Mongolian sheep wool. VI. Behavior of Mongolian sheep wool toward dyes.** Mitko Saito and Tadatsugu Furuki. *Rept. Inst. Sci. Research Manchoukuo* 3, 270-82 (1933) (Abstracts in English); cf. C. A. 33, 75577.

Comparison of the dye-absorbing ability of Mongolian sheep wool with that of merino wool indicated that the former generally absorbed more dye, especially basic or direct dyes. This is in accord with previously reported findings that the former is also more susceptible to chemical reagents, and is interpreted to mean that Mongolian wool is either composed of more loosely combined materials or more labile compounds. VII. Difference of the length, the fineness, the composition and the general quality of Mongolian sheep wools obtained from different parts of the sheep body. *Ibid.*, 283-301. The av. semi-annual yield of wool from Mongolian sheep was 044 g. per head. The fiber varied in grease and suint contents from 2% to 10% and 4.5 to 12%, resp., depending on the part of the sheep body from which they were taken. The relative amounts of coarse and fine wool in the fleece also varied with location on the sheep body, the back, side and shoulder parts contg. 15 to 38% of coarse fibers, compared with 60% in the top and arm piece parts. The longest fibers were found in the fleece, back and neck parts. The data indicate that the best quality of wool is obtained from the back, fleece, side and shoulder parts of the sheep body.

Milton Harris

Milton Harris

ASNT-514 METALLURGICAL LITERATURE CLASSIFICATION

TION, F.  
KARPISEK, J.; LHOTKA, J.; TION, F.; VANECEK, R.

Chronic jaundice with undetermined pigment in liver cells.  
Cas. lek. cesk. 96 no.20:611-613 17 May 57.

(JAUNDICE, case reports  
with undeterm. liver pigment, diag. & pathogen. (Cz))

Tien, F.

✓ Electrophoretic changes in protein spectrum in hepatic diseases. J. Hrabánek, P. Tlou, and J. Burilánek. *Časopis lékařů českých* 90, 51-2 (1951).—By means of Tiselius electrophoresis changes were studied in the following diseases: epidemic hepatitis (I), cirrhosis (II), bile-duct cancer (III), and obstructive jaundice. The course of I is characterized by considerable variations in the globulin fractions. The results obtained in II confirm those of other workers. During the first stages of II a "plateau" between the  $\beta$ - and  $\gamma$ -globulin fractions was frequently observed. Its possible meaning is discussed. In addn. to the  $\alpha$ -globulin fraction, the  $\beta$ -globulin fraction is increased in III with metastases. Attention is drawn to the possibility of using electrophoresis in the differential diagnosis of medical and surgical jaundice.

Anthony Zenisek

(2)

GREGOR, O.;TION, F.

Liver function disorders in peptic ulcer. Shorn pathofysiol. trav.  
vyz. 6 no. 1-2:34-36 July 1952. (CLML 22:4)

1. Of the Fourth Internal Clinic (Head--Prof. B. Prusik, M. D.) of  
Charles University, Prague.

BURIANEK, J., Dr.; TION, Fr., Dr.

Clinical significance and hazards of liver biopsy. Cas. lek. .  
cesk. 94 no.28:775-776 8 July 55.

1. IV. interni klinika K.U.  
(LIVER,  
biopsy, clin. value & hazards.)  
(BIOPSY,  
liver, clin. value & hazards.)

HRABANE, J.; TION, F.; BURIANEK, J.

Electrophoretic modifications in blood protein spectrum in  
epidemic hepatitis. Gastroenterologia bohema 4 no.2-4:106-113  
Oct 50. (CLML 20:5)

1. Of the Fourth Internal Clinic (Head--Prof.B.Prusik,M.D.).

HRABANE, J.; TION, F.; BURIANEK, J.

Electrophoretic modifications in the protein spectrum in liver diseases. Cas.lek.cesk. 90 no.2:54-57 12 Jan 51. (CLML 20:6)

1. Of the Fourth Internal Clinic of Charles University, Prague (Head--Prof.B.Prusik).

BURIANKE, Jiri, MUDr; TION, Frant., MUDr; asistenti kliniky

Problems of infectious hepatitis and serum hepatitis. Cas.lek.cesk.  
91 no.14:418-421 4 Apr 52.

1. IV. interni klinika Karlovy university, prednosta: prof. B.Prusik.  
(HEPATITIS, INFECTIOUS, differential diagnosis,  
jaundice, homologous serum, clin. aspects)  
(JAUNDICE, HOMOLOGOUS SERUM, differential diagnosis,  
hepatitis, infect., clin. aspects)

KRGILEK, A.; TION, F.; ZAVODNY, F.

Thrombophlebitis of axillary and subclavian veins following  
physical strain. Cas.lek.cesk. 89 no.19:546-549 12 My '50.  
(CLML 19:3)

1. Authors are Assistants in the Fourth Internal Clinic of  
Charles University in Prague.

TION, Frant., MUDr

Therapy of liver cirrhosis. Prakt. lek., Praha 34 no.23:521-525  
5 Dec 54.  
(LIVER CIRRHOSIS, therapy)

BRIO, Nataliya Petrovna; KONOKOTINA, Nadezhda Petrovna; TIOV Aleksandr  
Ivanovich; PICHUGINA, N.V., inzh., retsenzent; CHEKULAYEVA,  
L.V., kand. tekhn. nauk; BOGATAYA, L.M., red.; ZARSHCHIKOVA,  
L.N., tekhn. red.

[Production and chemical control in the dairy industry] Tekhno-  
khimicheskii kontrol' v molochnoi promyshlennosti. Moskva, P.  
shchepromizdat, 1962. 395 p. (MIRA 16:6)  
(Milk--Analysis and examination)  
(Dairy industry--Quality control)

TIPA, D., ing.; LONGU, F., ing.

Problems regarding electric wiring in housing structures  
constructed by industrial methods. Rev constr si mat  
constr 16 no. 6:310-315 Je '64.

TIPARESCU, E. dr.; VASILIU, A. dr.; DUMITRESCU, Maria, chim.

Mucoviscidosis, with special refetence to 3 clinical cases.  
Med. intern. 16 no. 2: 235-240 F#64.

1. Lucrare efectuata in Spitalul de boli pulmonare al  
M.T.Tc., Bucuresti.

\*

TIPARESCU, E., dr.; DIMITRIU, Eleonora, dr.

Lofgren's syndrome. (Concerning a clinical case). Med. intern.,  
Bucur 13 no.2:293-297 P '61.

1. Lucrare efectuata in Spitalul C.F.R. nr. 3

(ERYTHEMA NODOSUM case reports)  
(LYMPH NODES diseases)  
(LUNG DISEASES case reports)

TIPARY, Kalman, okleveles gepeszmernok

Extracting winch types designed by our Institute. Banyaterv  
no.15:41-56 Je '63.

1. Banyaszati Tervezo Intezet.

TIPASHOV, I.V., inzhener.

Efficient use of the capacity of an arc steel smelting furnace  
under increased charge weight. Trudy GPI 12 no.1:5-15 '56.  
(Electric furnaces) (MLRA 10:5)

TIPASHOV, I.V., inzhener.

Engineering method of determining optimum weight of the charge for  
arc steel smelting furnaces under existing capacity of furnace  
transformers. Trudy GPI 12 no.1:16-26 '56. (MLRA 10:5)  
(Electric furnaces)

TIPASHOV, Ivan Vasil'yevich; FAREMAN, S.A., red.; KISELEVA, T.I., red.  
izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Engineering methods of investigating electric arc steel-  
smelting furnaces] Inzhenernye metody issledovaniia dugovykh  
staleplavil'nykh pechei. Moskva, Gos. nauchno-tekhn. izd-vo  
lit-ry po chernoi i tsvetnoi metallurgii, 1961. 55 p.

(Electric furnaces)

(Smelting furnaces) (MIRA 14:10)

Pipei, N.

Miscării în Pelicula de Lubrifiant Dintre

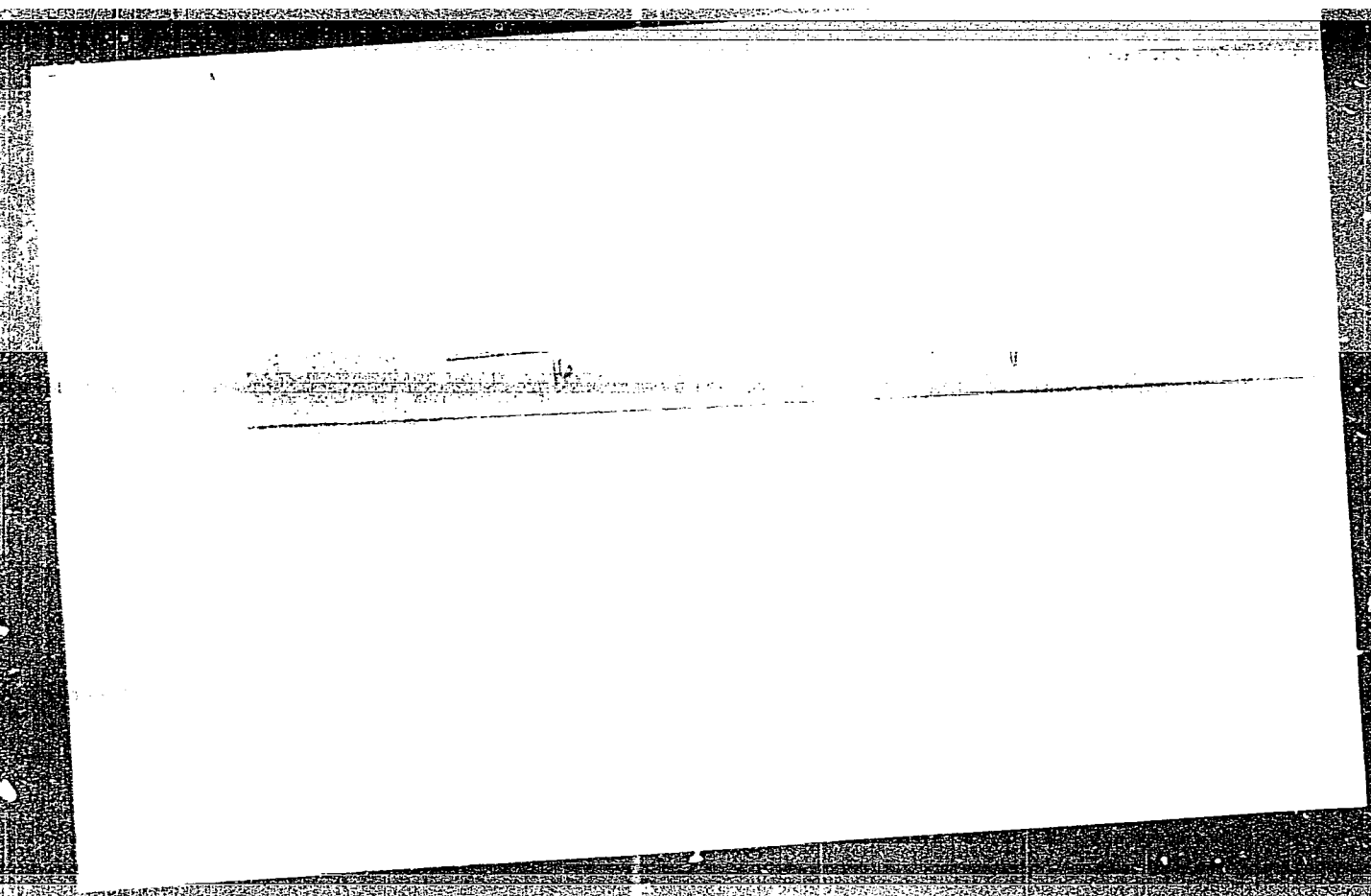
TIPPI, N.

"Repartition of Pressures in Bearings Under Varying Loads. p. 272."  
BULRTIN STIINTIFIC, Vol.3, No.2-4, Apr./Dec. 1951. Bucuresti, Rumania.

SO: Monthly List of East European Accessions, L.C.Vol. 2, No.11, Nov.1953.  
Uncl.

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R001755810009-5

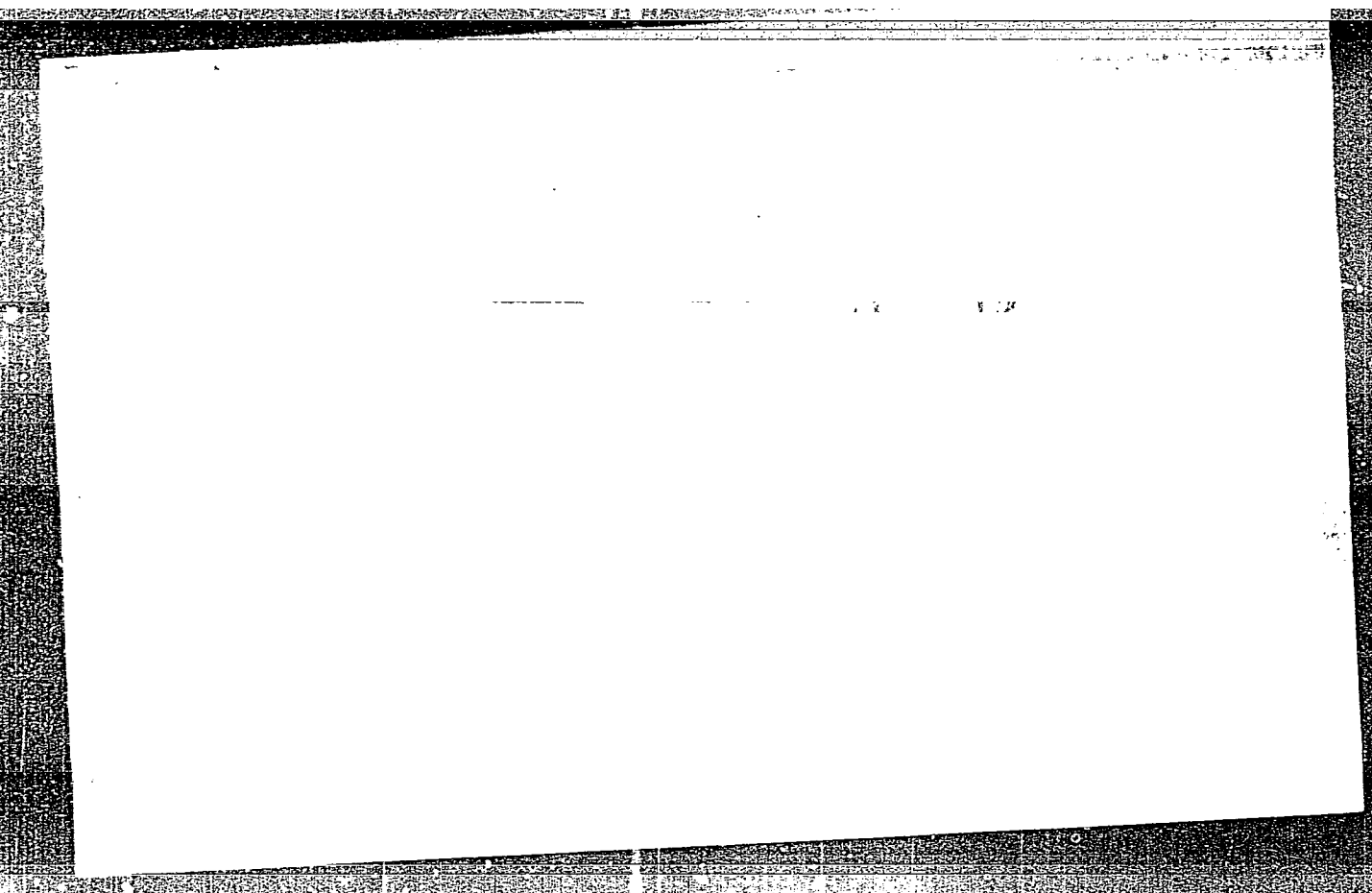


APPROVED FOR RELEASE: 07/16/2001

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**"APPROVED FOR RELEASE: 07/16/2001**

**CIA-RDP86-00513R001755810009-5**



**APPROVED FOR RELEASE: 07/16/2001**

**CIA-RDP86-00513R001755810009-5"**

TIPEI, N.

Experimental Examination of Sliding Bearings. Studii Si Cercetari De Mechanica  
Aplicata (Studies and Research in Applied Mechanics), #1-2:89:Jan-Jun 55

TIPEI, N.

Stability of motion in bearings with a dynamic load. p. 1723.

Academia Republicii Populare Romine. COMUNICARILE. Bucuresti.

Vol. 5, no. 12, Dec. 1955.

So. East European Accessions List Vol. 5, No. 9 September, 1956